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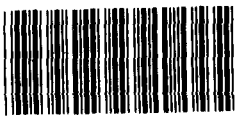
Testimony



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Issues Related to FAA's Fiscal Year 1991 Budget Request

Statement of
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Resources, Community, and Economic
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Before the
Subcommittee on Transportation
Committee on Appropriations
House of Representatives

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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to testify on the Federal Aviation Administration's (FAA) fiscal year 1991 budget request. FAA's budget continues to grow. Its request of almost $8.3 billion represents a 16 percent increase over the fiscal year 1990 appropriation. The two major components of the budget are the Operations account--which funds the ongoing operation and maintenance of the Air Traffic Control (ATC) system, and the Facilities and Equipment (F&E) account--which funds modernization of the ATC system. Together, Operations and F&E account for $6.6 billion, or 80 percent of the total fiscal year 1991 request.

Over the past few years, our testimonies and reports have alerted this Subcommittee of FAA's difficulties in both these areas. FAA's ATC modernization effort, whereby the agency is replacing its existing radars, computers, and communications systems, has experienced significant delays. At the same time, the cost of modernization has more than doubled. Initiatives to hire, retain, and train critical safety employees--controllers, inspectors and maintenance technicians--while encouraging, continue to fall short of expectations.

In light of continuing problems in both areas, our testimony will make three major points:

-- First, developing and installing new ATC systems continues to take longer than FAA expected. Most major systems have experienced another round of delays. Such delays have required the addition of interim projects to upgrade existing systems. Our work to date on the largest of these interim projects suggests that FAA did not properly plan and assess its needs before seeking funding from Congress.

-- Second, FAA has not yet identified the additional human resources necessary to implement ATC modernization projects

at field locations. Insufficient staff at field locations to install, test, and be trained on the new equipment will cause further delays in realizing modernization benefits.

-- Third, FAA will not meet this year's staffing goals for controllers, inspectors, and maintenance technicians. It expects shortages of about 1,900 experienced controllers, 500 inspectors, and 1,500 maintenance technicians. In addition, FAA's training initiatives are falling behind schedule. FAA may have to curtail its planned hiring because of limited training capacity, further compounding shortages.

I will now provide an assessment of ATC modernization.

ATC MODERNIZATION PROBLEMS PERSIST

FAA experienced additional delays in key modernization projects during the past year. This was due mainly to a variety of technical problems vendors were having in developing hardware and software with the capability they promised. Delays heighten a need for additional short-term solutions like the Interim Support Plan to address projected system capacity shortfalls and equipment reliability problems. However, FAA must carefully scrutinize proposed short-term solutions to avoid selecting projects that are not cost beneficial.

Continuing Modernization Delays

Past delays of 1 to 4 years in modernizing the ATC system are well known. However, as we noted in our recently issued fact sheet to this Subcommittee, significant additional delays occurred this

year.[1] In the space of about a year, 8 of 12 major projects experienced a delay of at least of 200 days. We believe that continued delays are the result of the acquisition problems we have pointed out in the past, such as inadequate operational testing before committing to production. FAA was allowing contractors to proceed without substantial evidence that the proposed system could meet its requirements. As a result, hardware and software systems could not perform as promised and modifications had to be made. Following my statement, my colleague, Ms. Hecker, from the Information Management and Technology Division, will comment in detail on problems experienced by FAA with two of the major ATC modernization projects: the Advanced Automation System and the Mode S project.

To its credit, FAA has recently taken some encouraging steps to revamp its acquisition process, which we believe will help minimize such problems in the future. The Administrator has created a new Executive Director for Acquisition who, among other duties, will be tasked with performing independent program reviews and ensuring that independent operational testing is conducted. We have recommended such independent testing and view the creation of this new organization as encouraging.[2] We plan to evaluate its effect on new acquisitions.

Facilities and Equipment Costs Continue to Rise

As modernization of the ATC system moves into the 1990s, FAA's F&E budget request has reached an all-time high of $2.5 billion this year, a 47 percent increase over the fiscal year 1990 appropriation. This large increase is due to (1) the movement of

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[1]Air Traffic Control: Status of FAA's Effort to Modernize the System (GAO/RCED-90-146FS, Apr. 17, 1990).

[2]Air Traffic Control: FAA Needs to Implement an Effective Testing Program (GAO/IMTEC-89-62, Sept. 22, 1989).

original National Airspace System (NAS) Plan projects into full production and (2) the addition of new modernization projects due to NAS Plan project delays and new requirements. The addition of these new projects will keep the F&E account at the $2.5 to $3.0 billion level for at least the next 5 years. Over that period, FAA believes it needs $13.5 billion to sustain the F&E program. In addition, FAA is currently analyzing whether its 1983 strategy to consolidate 188 terminal and 20 enroute facilities into 23 area control facilities is still operationally feasible. FAA has acknowledged that a revised consolidation plan could cost an additional $1 billion.

Problems in Planning and Implementing The Interim Support Plan

Delays in the original NAS Plan projects--combined with increasing demand on the ATC system--have required new projects such as expansion of the Dallas/Ft. Worth and the Chicago terminal radar approach control (TRACON) facilities. At the request of this Subcommittee, we are reviewing one of the largest of these short-term projects: the Interim Support Plan, which FAA currently estimates at a total cost of $430 million. The Interim Support Plan is a conglomeration of projects directed primarily at resolving maintenance and capacity problems at TRACONs until longer term modernization activities--such as the Advanced Automation System--are completed.

Our work to date suggests that FAA did not properly plan and assess the Interim Support Plan before it sought funds for the project. The program was included in FAA's budget before the agency's normal review process was completed. Also, FAA's Systems Engineering and Integration Contractor found that 7 of the 10 individual projects in the program it examined were not cost-beneficial and another was cost-beneficial for only half of the proposed sites. The contractor also recommended that each project

be assessed individually. We believe such an assessment would have verified that solutions were needed for specific equipment problems. Instead, FAA generally dismissed the contractor's concerns and proceeded with the project. Therefore, FAA has no assurance that the equipment being procured will address the most pressing problems at its TRACON facilities.

Furthermore, despite the urgency initially ascribed to the Interim Support Plan, implementation is behind schedule. In 1988, then-Administrator McArtor indicated that there were no more serious operational requirements than those covered by the Interim Support Plan. However, as of March 1990, most of the Interim Support Plan projects are behind schedule and only a small portion of the equipment has reached the field.

In addition, several FAA operations officials believe additional short-term projects will be necessary before the NAS Plan is completed. One example is the need for more controller work stations due to the expansion of the Chicago TRACON. The Interim Support Plan delays and the likelihood of additional short-term projects indicate that FAA should properly review new projects before funding is requested.

Increasing Reliance on Support Contractors

FAA's increasing reliance on support contractors is an emerging issue that requires the agency's attention. Following a review of the NAS Plan in 1982, the White House Science Council Panel recommended that FAA hire a prime contractor to formulate, design, and integrate all NAS Plan systems. In 1984, FAA hired a support contractor but did not completely follow the panel's recommendation. Unlike a prime contractor, Martin Marietta, as the Systems Engineering and Integration Contractor, is not responsible for either the initial system design or for directly controlling individual system vendors. Instead, it serves as FAA's technical

adviser for implementing the NAS Plan. One of Martin Marietta's primary responsibilities is to ensure that the thousands of components being built will be capable of working together, a process called systems integration.

Recently, FAA awarded a $139 million contract to TRW Incorporated to assist with its automation effort, including help with the Advanced Automation System. Some of the types of tasks TRW will perform, such as testing and evaluation, parallel the tasks listed in Martin Marietta's contract.

Because of FAA's growing use of support contractors, we are concerned about how additional players will affect Martin Marietta's overall role in integrating all modernization projects. FAA officials told us that they are reviewing their use of support contractors. As part of this assessment, defining precise roles would help to avoid overlapping responsibilities and unnecessary costs. Furthermore, as we recently testified, developing in-house systems engineering expertise is an option that deserves serious consideration in light of the ongoing nature of modernization.[3]

FAA Has an Opportunity to Reassess and Report Progress Against Modernization Goals

The original NAS Plan contained generalized, high-level goals such as increased controller productivity and a reduced risk of accidents and collisions to be achieved when NAS Plan projects are completed in the late 1990s. A problem associated with the NAS Plan is that decision makers have no yardstick with which to measure the agency's incremental progress toward meeting long-term goals. Acknowledging that the NAS Plan no longer reflected its total ATC modernization needs, FAA recently announced that it was

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[3]Issues Related to FAA's Modernization of the Air Traffic Control System (GAO/T-RCED-90-32).

developing a more comprehensive program entitled the Capital Investment Plan. This new effort will include the original NAS Plan projects as well as new projects needed for added capacity, new requirements, and sustaining existing operations.

We believe the Capital Investment Plan provides FAA with the opportunity to comply with our previous recommendation that it set relative project priorities on the basis of benefit cost ratios, mission needs, or safety considerations.[4] Prioritization would provide visibility to FAA's proposed emphasis in the Capital Investment Plan. Indeed, since the new Plan will distinguish those projects required to sustain the existing ATC system from those needed to increase capacity, the Congress would be in a better position to weigh trade-offs between near-term and long-term activities. The new Plan also provides FAA with the opportunity to reassess and update its original goals, to develop a measurement strategy, and clearly show its progress in meeting these goals. For example, one approach FAA can take is to specify in quantitative terms, how incremental increases in controller productivity contribute to reducing flight delays and the risk of collisions.

TRANSITION TO THE NEW ATC SYSTEM

Once developed, new ATC systems still need to be installed and made operational in the field. FAA has yet to effectively address two key issues relating to bringing new systems on line: namely, identifying how much staff is needed to install and test equipment in the field and train controllers in its operation, and providing regions with an accurate information system for planning implementation activities.

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[4]Air Traffic Control: Continued Improvements Needed in FAA's Management of the NAS Plan (GAO/RCED-89-7, Nov. 10, 1988).

Field Implementation Staff Needs Still Unknown

After last year's appropriation hearings, this Subcommittee told FAA to assess its human resource requirements to bring modernization equipment on line and report on its plans to meet such needs. It has not done so. While FAA officials agree that they need more staff, they have not estimated all implementation requirements. FAA has a draft study that estimates its needs for projects to be installed at one group of facilities: Air Route Traffic Control Centers. While this study of implementation needs at Centers is still in draft form and its results are being validated, it does suggest substantial staffing shortfalls of air traffic controllers, engineers, and technicians--over 700 staff years in fiscal year 1991 and steadily increasing to over 1,900 staff years in fiscal year 1995 (see attachment I for more details). It also stated that 40 percent of the estimated implementation tasks had to be performed by FAA controllers, engineers, and technicians and could not be contracted out. These numbers do not include estimates for other facilities, such as TRACONs and airport towers, where FAA has not assessed its staffing needs.

As we reported in June 1989, continued delays in NAS Plan projects have saved FAA from having to face the consequences of not having enough people available to bring new systems on line.[5] However, FAA may soon have new systems at its disposal that go unused unless it quickly determines the number of people it needs and takes decisive action to hire and train them.

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[5]Air Traffic Control: FAA's Implementation of Modernization Projects in the Field (GAO/RCED-89-92, June 28, 1989).

FAA's Regional Information System Not Fully Operational

We have also reported on the inadequacy of FAA's information systems to monitor project milestones and estimate project resources. In particular, FAA regions had difficulty scheduling resources to install new systems because of accurate equipment delivery dates. To improve its management of information, FAA initiated development of a new reporting system. Initially projected to be on line by January 1990, the new system is not scheduled to be complete for another 3 to 6 months.

In the meantime, FAA project managers continue to use the old information systems. This has led to problems, as evidenced by a Charlotte airport situation concerning installation of a new instrument landing system. Regional officials delayed contracting for site preparation for the new equipment because they believed the information system inaccurately portrayed the actual status of the contractor's equipment delivery plans. Indeed, although the contractor was 17 months behind schedule, the information system listed equipment delivery as occurring in January 1990. However, without telling the region, FAA purchased some equipment through other means and it was delivered to the Charlotte airport in February 1990. Since the site was not prepared to receive the equipment, it had to be stored on-site. FAA plans to complete installation in late June 1990.

I will now provide a status report on FAA's efforts to rebuild and train its safety work forces.

OPERATIONS WORK FORCES

Although FAA has made progress in increasing its work forces, staffing shortages persist, and the agency is falling short in training its existing work forces. We are concerned that FAA has

not fully addressed the scope and cost of developing a sufficient and adequately trained work force. Maintaining a high level of air safety requires not only a commitment to fund increases in the air traffic controller, aviation safety inspector, and field-maintenance technician work forces, but also a concurrent commitment to adequately train them.

Hiring Goals Not Met and Staffing Needs Not Determined

Although FAA is making progress in increasing its controller and safety inspector work forces, it continues to experience shortages in both. Last January, FAA estimated it would fall 1,945 people short of its 1990 congressional mandate of 12,725 full performance controllers and that it also would not meet its mandate to have 17,500 controllers overall on board. The overall number includes developmental and full performance controllers. Although FAA has stated it does not need to meet its hiring mandate because of lower than expected aviation growth, the staffing level FAA actually requires cannot be determined because, after 3 years, staffing standards are still being updated.

FAA also will have a safety inspector shortfall of over 255 out of over 3,000 needed in 1991. The shortage may actually be greater because FAA's inspector staffing standards understate the number needed for major new inspection requirements such as "hands on" inspection of aging aircraft and surveillance of foreign aircraft repair stations. FAA plans to develop new inspector staffing standards by 1992 and believes that once developed they will show a need for more inspectors.

In addition, there is an emerging issue which could affect the size and role of the inspector work force. FAA is developing a concept called "self-audit," to better utilize the airlines' quality assurance programs to ensure that safety regulations

governing pilots and maintenance are followed. This concept is based on the premise that air carriers are primarily responsible for ensuring that their operations are safe and in compliance with FAA regulations. It is too early to say how the self-audit concept will evolve and what the specifics will entail. We intend to closely follow the concept's development.

Technician Shortages Force FAA to Contract Out Maintenance

At the beginning of fiscal year 1990, FAA was over 1,500 people short of the 10,000 technicians it needed. FAA has not significantly increased its technician work force over the last several years because it thought it would need fewer technicians as new NAS Plan equipment came on line. However, this benefit has not yet materialized, and continued NAS Plan delays have resulted in existing equipment being maintained longer and more technicians being needed.

Now, as we have been predicting for several years, hiring enough technicians to overcome the shortfall is exacerbated because 38 percent of the maintenance work force is within 5 years of retirement age. To cope with this problem, FAA's proposes to hire 2,350 technicians by 1994 and increase the use of contracting. Even at this hiring rate, FAA is likely to experience shortages of fully trained technicians for some time because it takes from 3 to 5 years for a newly hired technician to reach the full performance level.

FAA proposes to spend an estimated $490 million through 1995 to contract for maintenance activities, including $170 million for activities which FAA acknowledges are better undertaken in-house. FAA now has several years' experience in maintenance contracting. To make informed decisions on funding these contract activities, the Congress needs information from FAA on how such contracting

meets its needs, the impact of contracting on its efforts to recruit maintenance technician, and the relative cost of contracting versus in-house maintenance.

Pay Demonstration Project Has Had Mixed Results

As part of its plan to overcome staffing shortages, FAA began paying controllers, inspectors, and maintenance technicians an incentive allowance of up to 20 percent in June 1989 to attract people to hard-to-staff facilities in the Los Angeles, Oakland, Chicago, and New York areas. FAA has paid about $15 million in incentive allowances through March 1990. While the overall number of employees has slightly increased at participating facilities, results so far are mixed. For example, for the nine participating ATC facilities, only four have shown an increase in the number of experienced controllers.

Training Shortfalls Exacerbate Staffing Problems

Complicating its staffing problems, FAA is falling short in training controllers, inspectors, and maintenance technicians. For example, FAA has a continuing backlog of new inspector training. In fact, FAA may not hire all of the 300 inspectors it intends to bring on board this year because of its inability to train them. Part of the problem is that the Academy, FAA's primary training facility, does not have enough instructors. To address this problem, FAA recently announced an initiative to make instructor positions more attractive by upgrading pay and training. However, this initiative will take time to work, and FAA may need to seek short-term solutions to reduce its inspector training backlog.

The demand for training newly hired maintenance technician will also outstrip the Academy's capacity in fiscal years 1991 and 1992 when hiring plans call for about 900 new technicians. The Academy can accommodate only 640 new hires each year. FAA plans to

meet the excess demand by using a type of computer-based instruction, which is ineffective, in part, because it is an inappropriate training medium for new technicians.

FAA's training shortfall is compounded by available training seats going unused. Although 28,000 students attended Academy training in fiscal year 1989, another 3,500 available seats were unfilled. FAA does not have a policy to minimize "no shows."

FAA Slow in Implementing Its Training Initiative

FAA has recognized its training deficiencies, such as poor training system design, outmoded and inadequate training delivery systems, and a fragmented training organization. To address these problems, FAA established an Office of Training and Higher Education and developed a comprehensive, $406 million training plan called Flight Plan for Training which extends through 1994. However, progress in implementing this plan has been slow--30 of its 47 projects are already behind schedule, some as much as a year. For example, FAA is late beginning improvements in its curricula for training maintenance technicians despite its critical need to sustain a major effort in this area.

In our view, this program is off track because of insufficient funding and poor planning. Due to internal competition for funds, FAA plans to spend only $48 million of the $89 million needed to keep the plan on track through fiscal year 1990. Poor planning has caused a ripple effect of delays. For example, improvements in maintenance technicians' curricula have not begun because FAA must first complete a study of the technicians' job tasks, which will be the basis of the training project. Yet, the job task study is itself a year behind schedule. This ripple effect ends up cascading throughout the system. Similarly, delays in increasing the use of simulation for controller training make it necessary to continue lengthy and costly on-the-job training for controllers.

In turn, lengthy controller training affects FAA's ability to meet it full performance level mandate for controllers.

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There is no doubt that the extraordinary needs of both maintaining and modernizing the ATC system will require substantial increases in FAA's funding. We believe it is crucial that FAA clearly show the Congress, the aviation community, and the flying public how these increases will result in measurable benefits.

In the F&E account, this will require FAA to prioritize its many needs, and assure that it has adequate staff to implement new systems. Regarding its current operations, FAA needs to work toward meeting Congressionally mandated goals for its work forces and determining its true work force staffing needs. Although FAA has started initiatives in some of these areas, they have often been delayed and fallen short of the mark. FAA needs to promptly address these problems if we are to see the safer and more efficient ATC system that the agency envisions. We intend to continue advising Congress on FAA's progress in these areas.

This concludes our prepared statement. I will be pleased to address the Subcommittee's questions at this time.

ATTACHMENT I

NAS PLAN IMPLEMENTATION RESOURCE ESTIMATES BY STAFF YEAR FOR FISCAL YEARS 1991-1995

FAA organization	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993	Fiscal year 1994	Fiscal year 1995
Air traffic					
Requirements[a]	297	468	885	1,286	1,533
Availability	80	126	194	344	207
Shortfall[b]	217	342	691	942	1,326
Airway facilities					
Requirements[a]	706	820	862	860	799
Availability	214	214	214	214	214
Shortfall[b]	492	606	648	646	585
Total shortfall[b]	709	948	1,339	1,588	1,911

[a]The study estimated that about 40 percent of these requirements must be done by FAA on-site Center personnel, and that the remaining 60 percent could be accomplished by others such as contractors or FAA personnel from other locations.

[b]These shortfalls represent only work needed for NAS Plan implementation. They do not include operational shortfalls, estimated at 411 staff years in fiscal year 1995, or projected attrition, estimated at 271 staff years in fiscal year 1995.

Source: August 1989 Draft ARTCC Resource Study

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